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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/613,362	07/10/2000	Akio Matsumoto	KNI-124-A-1	9452

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EXAMINER	
POE, MICHAEL I	

ART UNIT	PAPER NUMBER
1732	

DATE MAILED: 07/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/613,362	MATSUMOTO ET AL.	
	Examiner	Art Unit	
	Michael I Poe	1732	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-25* is/are pending in the application.

4a) Of the above claim(s) *6,7,10 and 14-25* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,8,9 and 11-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 July 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *20000710*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

2. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Election/Restrictions

3. Applicant's election with traverse of Group I, claims 1-13, and species A1 and B2 in the reply filed on June 1, 2004 is acknowledged. The traversal is on the ground(s) that it would not represent a serious burden on the examiner to examine all of the claims together. This is not found persuasive because a complete search for the non-elected apparatus of Group II, claims 14-25, would require searches in class 425 and/or class 249 for the specific structural limitations of the non-elected apparatus that would not be required for a complete search of the elected method of Group I, claims 1-12, which requires only searches in class 264 for the specific stepwise requirements of the elected method. Further, a complete search for the non-elected species of Group I (e.g., A2 and B1) would require additional searches in class 264 for specific composition limitations of the non-elected species that would not be required for a complete search of the elected species of Group I (e.g., A1 and B2).

The requirement is still deemed proper and is therefore made FINAL.

4. Although the applicant elected Group I, claims 1-13, and further elected species A1 and B2 in the reply filed on June 1, 2004, the applicant failed to identify which claims were generic and which claims were readable on the elected species. In order to expedite prosecution, the examiner called the applicant's attorney to confirm which claims the applicant considered generic and which claims the applicant considered readable on the elected species. The examiner and the applicant's attorney agreed

that claims 1-3, 5 and 11-13 were generic to all species, claims 4 and 8 were readable on species A1 and claim 9 was readable on species B2. As such, it was further agreed the claims 1-5, 8, 9 and 11-13 would be examined in response to the reply filed on June 1, 2004.

Claims 6, 7, 10 and 14-25 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to either nonelected inventions or species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on June 1, 2004.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1-4 and 13 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 4,464,485. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the reasons provided hereafter.

Claims 1-4 and 13

The claims of U.S. Patent No. 4,464,485 teach a method of producing a porous material having open pores including preparing (stirring) a slurry (an O/W-type emulsion slurry) from a mixture comprising

bisphenol-type epoxy resin (an epoxy compound having at least one epoxy ring in one molecule; a glycidyl epoxy resin; a bisphenol epoxy resin), a hardener, a filler and water; casting the slurry into a water-impermeable mold; hardening the slurry while it contains the water; and dehydrating the hardened body wherein the hardener is either (a) a mixture of an amide compound (a polyamide resin) which obtained through a reaction between a monomeric fatty acid and an ethyleneamine (chain-like fatty primary polyamine), or (b) a reaction mixture obtained by mixing reaction of the monomeric fatty acid, the polymeric fatty acid and the ethyleneamine (chain-like fatty primary polyamine) and wherein the ratio between the polymeric fatty acid and the polymeric fatty acid polyamide ranges between 90:10 and 5:95 by weight (claims 1-8). Note that claim 13 is currently written does not require that the components are added in any particular order and that each individual mixture is stirred separately; therefore, the single step mixing process taught by the claims of U.S. Patent No. 4,464,485 is readable on claim 13 as currently written.

The claims of U.S. Patent No. 4,464,485 do not specifically teach the functions of the hardener and the filler as claimed in claim 1. However, one of ordinary skill in the art would have obviously recognized that the hardener and the filler serve the claimed functions to at least some degree in the process of the claims of U.S. Patent No. 4,464,485 although not specifically taught.

7. Claims 5, 8, 9, 11 and 12 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 4,464,485 in view of U.S. Patent No. 4,783,489 (Inoue et al.).

Claims 5, 8 and 9

The discussion of the claims of U.S. Patent No. 4,464,485 as applied to claim 1 above applies herein.

As discussed above with regard to claim 1, the claims of U.S. Patent No. 4,464,485 teach that the hardener is either (a) a mixture of an amide compound (a polyamide resin) which obtained through a reaction between a monomeric fatty acid and an ethyleneamine (chain-like fatty primary polyamine), or (b) a reaction mixture obtained by mixing reaction of the monomeric fatty acid, the polymeric fatty acid and the ethyleneamine (chain-like fatty primary polyamine) and wherein the ratio between the polymeric fatty acid and the polymeric fatty acid polyamide ranges between 90:10 and 5:95 by weight (claims 1-8).

However, the claims of U.S. Patent No. 4,464,485 do not specifically teach that the filler has an average particle diameter ranging from 0.3 μm to 8 μm or from 1 μm to 20 μm and that the filler is primarily composed of aluminum hydroxide. In this regard, Inoue et al. teach a method of manufacturing porous resin molds containing continuous holes including adding a hardener to a mixture of an epoxy compound and an emulsifier; fully stirring the mixture to make it into an even emulsion while gradually adding water; adding filler to the emulsion; fully stirring the emulsion containing the filler to form an even mixture to be used as a molding material; pouring the molding material into a container; and fully curing and evaporating water from the material molded in the container to obtain a porous resin mold containing continuous holes wherein the filler may comprise aluminum hydroxide and preferable has a particle range such as 60-100 mesh, 100-200 mesh, 200-300 mesh or smaller than 300 mesh (an average particle diameter ranging from 0.3 μm to 8 μm or 1 μm to 20 μm) (column 7, lines 33 - 54; column 5, line 39 - column 6, line 11). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use an aluminum hydroxide filler having the claimed average particle diameter in the process of the claims of U.S. Patent No. 4,464,485 as taught by Inoue et al. to form a porous article having excellent dimensional stability, mechanical properties and durability (see specifically column 2, lines 60-64 of Inoue et al.).

Claim 11

The discussion of the claims of U.S. Patent No. 4,464,485 as applied to claim 1 above applies herein.

Neither the claims of U.S. Patent No. 4,464,485 nor Inoue et al. specifically teaches that the filler has a grain size distribution selected such that an integrated sieve volume of particle diameters which are ¼ of the Rosin-Rammler's absolute size constant is <= 30%. However, Inoue et al. further teach that the pore diameter and porosity of the mold are determined by the range of particle sizes of the filler and the composition of the filler (column 6, lines 2-6). As such, Inoue et al. obviously recognized that the particle/grain size distribution is a result-effective variable. Therefore, one of ordinary skill in the art would have obviously determined the optimum particle/grain size distribution in the process of the claims of U.S. Patent No. 4,464,485 in view of Inoue et al. through routine experimentation based upon the desired pore diameter and porosity of the porous article.

Claim 12

The discussion of the claims of U.S. Patent No. 4,464,485 as applied to claim 1 above applies herein.

The claims of U.S. Patent No. 4,464,485 do not specifically teach that the mixture further comprises a dilatancy reducing agent. However, Inoue et al. further teaches that a surface-active agent such as a surfactant (a dilatancy reducing agent) can be used to improve wetting of the fillers with water and to function as a protective colloid (column 5, line 7-37). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a dilatancy reducing agent in the process of the claims of U.S. Patent No. 4,464,485 as taught by Inoue et al. to improve wetting of the fillers in the process of the claims of U.S. Patent No. 4,464,485 thereby providing a higher quality porous article.

8. Claims 1-4 and 13 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 4,797,425. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the reasons provided hereafter.

Claims 1-4 and 13

The claims of U.S. Patent No. 4,797,425 teach a method of producing a porous material having open pores including preparing (stirring) a slurry (an O/W-type emulsion slurry) from a mixture comprising bisphenol-type epoxy resin (an epoxy compound having at least one epoxy ring in one molecule; a glycidyl epoxy resin; a bisphenol epoxy resin), a polyamide hardener (said hardener contains a polyamide resin), a filler and water; casting the slurry into a water-impermeable mold; hardening the slurry while it contains the water; and dehydrating the hardened body. Note that claim 13 is currently written does not require that the components are added in any particular order and that each individual mixture is stirred separately; therefore, the single step mixing process taught by the claims of U.S. Patent No. 4,797,425 is readable on claim 13 as currently written.

The claims of U.S. Patent No. 4,797,425 do not specifically teach the functions of the hardener and the filler as claimed in claim 1. However, one of ordinary skill in the art would have obviously

recognized that the hardener and the filler serve the claimed functions to at least some degree in the process of the claims of U.S. Patent No. 4,797,425 although not specifically taught.

9. Claims 5, 9, 11 and 12 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6 of U.S. Patent No. 4,797,425 in view of U.S. Patent No. 4,783,489 (Inoue et al.).

Claims 5 and 9

The discussion of the claims of U.S. Patent No. 4,797,425 as applied to claim 1 above applies herein.

The claims of U.S. Patent No. 4,797,425 do not specifically teach that the filler has an average particle diameter ranging from 0.3 μm to 8 μm and that the filler is primarily composed of aluminum hydroxide. In this regard, Inoue et al. teach a method of manufacturing porous resin molds containing continuous holes including adding a hardener to a mixture of an epoxy compound and an emulsifier; fully stirring the mixture to make it into an even emulsion while gradually adding water; adding filler to the emulsion; fully stirring the emulsion containing the filler to form an even mixture to be used as a molding material; pouring the molding material into a container; and fully curing and evaporating water from the material molded in the container to obtain a porous resin mold containing continuous holes wherein the filler may comprise aluminum hydroxide and preferable has a particle range such as 60-100 mesh, 100-200 mesh, 200-300 mesh or smaller than 300 mesh (an average particle diameter ranging from 0.3 μm to 8 μm) (column 7, lines 33 - 54; column 5, line 39 - column 6, line 11). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use an aluminum hydroxide filler having the claimed average particle diameter in the process of the claims of U.S. Patent No. 4,797,425 as taught by Inoue et al. to form a porous article having excellent dimensional stability, mechanical properties and durability (see specifically column 2, lines 60-64 of Inoue et al.).

Claim 11

The discussion of the claims of U.S. Patent No. 4,797,425 as applied to claim 1 above applies herein.

Neither the claims of U.S. Patent No. 4,797,425 nor Inoue et al. specifically teaches that the filler has a grain size distribution selected such that an integrated sieve volume of particle diameters which are ¼ of the Rosin-Rammler's absolute size constant is <= 30%. However, Inoue et al. further teach that the pore diameter and porosity of the mold are determined by the range of particle sizes of the filler and the composition of the filler (column 6, lines 2-6). As such, Inoue et al. obviously recognized that the particle/grain size distribution is a result-effective variable. Therefore, one of ordinary skill in the art would have obviously determined the optimum particle/grain size distribution in the process of the claims of U.S. Patent No. 4,797,425 in view of Inoue et al. through routine experimentation based upon the desired pore diameter and porosity of the porous article.

Claim 12

The discussion of the claims of U.S. Patent No. 4,797,425 as applied to claim 1 above applies herein.

The claims of U.S. Patent No. 4,797,425 do not specifically teach that the mixture further comprises a dilatancy reducing agent. However, Inoue et al. further teaches that a surface-active agent such as a surfactant (a dilatancy reducing agent) can be used to improve wetting of the fillers with water and to function as a protective colloid (column 5, line 7-37). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a dilatancy reducing agent in the process of the claims of U.S. Patent No. 4,797,425 as taught by Inoue et al. to improve wetting of the fillers in the process of the claims of U.S. Patent No. 4,797,425 thereby providing a higher quality porous article.

10. Claims 1-4 and 13 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of U.S. Patent No. 4,828,771. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the reasons provided hereafter.

Claims 1-4 and 13

The claims of U.S. Patent No. 4,828,771 teach a method of producing a porous material having open pores including preparing (stirring) a slurry (an O/W-type emulsion slurry) from a mixture comprising bisphenol-type epoxy resin (an epoxy compound having at least one epoxy ring in one molecule; a

glycidyl epoxy resin; a bisphenol epoxy resin), a polyamide hardener (said hardener contains a polyamide resin), a filler and water; casting the slurry into a water-impermeable mold; hardening the slurry while it contains the water; and dehydrating the hardened body. Note that claim 13 is currently written does not require that the components are added in any particular order and that each individual mixture is stirred separately; therefore, the single step mixing process taught by the claims of U.S. Patent No. 4,828,771 is readable on claim 13 as currently written.

The claims of U.S. Patent No. 4,828,771 do not specifically teach the functions of the hardener and the filler as claimed in claim 1. However, one of ordinary skill in the art would have obviously recognized that the hardener and the filler serve the claimed functions to at least some degree in the process of the claims of U.S. Patent No. 4,828,771 although not specifically taught.

11. Claims 5, 9, 11 and 12 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-19 of U.S. Patent No. 4,828,771 in view of U.S. Patent No. 4,783,489 (Inoue et al.).

Claims 5 and 9

The discussion of the claims of U.S. Patent No. 4,828,771 as applied to claim 1 above applies herein.

The claims of U.S. Patent No. 4,828,771 do not specifically teach that the filler has an average particle diameter ranging from 0.3 μm to 8 μm and that the filler is primarily composed of aluminum hydroxide. In this regard, Inoue et al. teach a method of manufacturing porous resin molds containing continuous holes including adding a hardener to a mixture of an epoxy compound and an emulsifier; fully stirring the mixture to make it into an even emulsion while gradually adding water; adding filler to the emulsion; fully stirring the emulsion containing the filler to form an even mixture to be used as a molding material; pouring the molding material into a container; and fully curing and evaporating water from the material molded in the container to obtain a porous resin mold containing continuous holes wherein the filler may comprise aluminum hydroxide and preferable has a particle range such as 60-100 mesh, 100-200 mesh, 200-300 mesh or smaller than 300 mesh (an average particle diameter ranging from 0.3 μm to 8 μm) (column 7, lines 33 - 54; column 5, line 39 - column 6, line 11). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill

would have been motivated to use an aluminum hydroxide filler having the claimed average particle diameter in the process of the claims of U.S. Patent No. 4,828,771 as taught by Inoue et al. to form a porous article having excellent dimensional stability, mechanical properties and durability (see specifically column 2, lines 60-64 of Inoue et al.).

Claim 11

The discussion of the claims of U.S. Patent No. 4,828,771 as applied to claim 1 above applies herein.

Neither the claims of U.S. Patent No. 4,828,771 nor Inoue et al. specifically teaches that the filler has a grain size distribution selected such that an integrated sieve volume of particle diameters which are ¼ of the Rosin-Rammler's absolute size constant is <= 30%. However, Inoue et al. further teach that the pore diameter and porosity of the mold are determined by the range of particle sizes of the filler and the composition of the filler (column 6, lines 2-6). As such, Inoue et al. obviously recognized that the particle/grain size distribution is a result-effective variable. Therefore, one of ordinary skill in the art would have obviously determined the optimum particle/grain size distribution in the process of the claims of U.S. Patent No. 4,828,771 in view of Inoue et al. through routine experimentation based upon the desired pore diameter and porosity of the porous article.

Claim 12

The discussion of the claims of U.S. Patent No. 4,828,771 as applied to claim 1 above applies herein.

The claims of U.S. Patent No. 4,828,771 do not specifically teach that the mixture further comprises a dilatancy reducing agent. However, Inoue et al. further teaches that a surface-active agent such as a surfactant (a dilatancy reducing agent) can be used to improve wetting of the fillers with water and to function as a protective colloid (column 5, line 7-37). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a dilatancy reducing agent in the process of the claims of U.S. Patent No. 4,828,771 as taught by Inoue et al. to improve wetting of the fillers in the process of the claims of U.S. Patent No. 4,828,771 thereby providing a higher quality porous article.

12. Claims 1-4 and 13 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 5,242,635. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the reasons provided hereafter.

Claims 1-4 and 13

The claims of U.S. Patent No. 5,242,635 teach a method of producing a porous material having open pores including preparing (stirring) a slurry (an O/W-type emulsion slurry) from a mixture comprising bisphenol-type epoxy resin (an epoxy compound having at least one epoxy ring in one molecule; a glycidyl epoxy resin; a bisphenol epoxy resin), a polyamide hardener (said hardener contains a polyamide resin), a filler and water; casting the slurry into a water-impermeable mold; hardening the slurry while it contains the water; and dehydrating the hardened body. Note that claim 13 is currently written does not require that the components are added in any particular order and that each individual mixture is stirred separately; therefore, the single step mixing process taught by the claims of U.S. Patent No. 5,242,635 is readable on claim 13 as currently written.

The claims of U.S. Patent No. 5,242,635 do not specifically teach the functions of the hardener and the filler as claimed in claim 1. However, one of ordinary skill in the art would have obviously recognized that the hardener and the filler serve the claimed functions to at least some degree in the process of the claims of U.S. Patent No. 5,242,635 although not specifically taught.

13. Claims 5, 9, 11 and 12 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-8 of U.S. Patent No. 5,242,635 in view of U.S. Patent No. 4,783,489 (Inoue et al.).

Claims 5 and 9

The discussion of the claims of U.S. Patent No. 5,242,635 as applied to claim 1 above applies herein.

The claims of U.S. Patent No. 5,242,635 do not specifically teach that the filler has an average particle diameter ranging from 0.3 μm to 8 μm and that the filler is primarily composed of aluminum hydroxide. In this regard, Inoue et al. teach a method of manufacturing porous resin molds containing continuous holes including adding a hardener to a mixture of an epoxy compound and an emulsifier; fully

stirring the mixture to make it into an even emulsion while gradually adding water; adding filler to the emulsion; fully stirring the emulsion containing the filler to form an even mixture to be used as a molding material; pouring the molding material into a container; and fully curing and evaporating water from the material molded in the container to obtain a porous resin mold containing continuous holes wherein the filler may comprise aluminum hydroxide and preferable has a particle range such as 60-100 mesh, 100-200 mesh, 200-300 mesh or smaller than 300 mesh (an average particle diameter ranging from 0.3 μm to 8 μm) (column 7, lines 33 - 54; column 5, line 39 - column 6, line 11). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use an aluminum hydroxide filler having the claimed average particle diameter in the process of the claims of U.S. Patent No. 5,242,635 as taught by Inoue et al. to form a porous article having excellent dimensional stability, mechanical properties and durability (see specifically column 2, lines 60-64 of Inoue et al.).

Claim 11

The discussion of the claims of U.S. Patent No. 5,242,635 as applied to claim 1 above applies herein.

Neither the claims of U.S. Patent No. 5,242,635 nor Inoue et al. specifically teaches that the filler has a grain size distribution selected such that an integrated sieve volume of particle diameters which are ¼ of the Rosin-Rammler's absolute size constant is <= 30%. However, Inoue et al. further teach that the pore diameter and porosity of the mold are determined by the range of particle sizes of the filler and the composition of the filler (column 6, lines 2-6). As such, Inoue et al. obviously recognized that the particle/grain size distribution is a result-effective variable. Therefore, one of ordinary skill in the art would have obviously determined the optimum particle/grain size distribution in the process of the claims of U.S. Patent No. 5,242,635 in view of Inoue et al. through routine experimentation based upon the desired pore diameter and porosity of the porous article.

Claim 12

The discussion of the claims of U.S. Patent No. 5,242,635 as applied to claim 1 above applies herein.

The claims of U.S. Patent No. 5,242,635 do not specifically teach that the mixture further comprises a dilatancy reducing agent. However, Inoue et al. further teaches that a surface-active agent such as a surfactant (a dilatancy reducing agent) can be used to improve wetting of the fillers with water and to function as a protective colloid (column 5, line 7-37). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a dilatancy reducing agent in the process of the claims of U.S. Patent No. 5,242,635 as taught by Inoue et al. to improve wetting of the fillers in the process of the claims of U.S. Patent No. 5,242,635 thereby providing a higher quality porous article.

14. Claims 1-5, 8, 9 and 11-13 are directed to an invention not patentably distinct from claims 1-8 of commonly assigned U.S. Patent No. 4,464,485. Specifically, claims 1-5, 8, 9 and 11-13 would have been obvious over the claims of U.S. Patent No. 4,464,485 or the claims of U.S. Patent No. 4,464,485 in view of Inoue et al. as discussed more extensively above.

Claims 1-5, 9 and 11-13 are directed to an invention not patentably distinct from claims 1-6 of commonly assigned U.S. Patent No. 4,797,425. Specifically, claims 1-5, 9 and 11-13 would have been obvious over the claims of U.S. Patent No. 4,797,425 or the claims of U.S. Patent No. 4,797,425 in view of Inoue et al. as discussed more extensively above.

Claims 1-5, 9 and 11-13 are directed to an invention not patentably distinct from claims 1-19 of commonly assigned U.S. Patent No. 4,828,771. Specifically, claims 1-5, 9 and 11-13 would have been obvious over the claims of U.S. Patent No. 4,828,771 or the claims of U.S. Patent No. 4,828,771 in view of Inoue et al. as discussed more extensively above.

Claims 1-5, 9 and 11-13 are directed to an invention not patentably distinct from claims 1-8 of commonly assigned U.S. Patent No. 5,242,635. Specifically, claims 1-5, 9 and 11-13 would have been obvious over the claims of U.S. Patent No. 5,242,635 or the claims of U.S. Patent No. 5,242,635 in view of Inoue et al. as discussed more extensively above.

The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP § 2302). Commonly assigned U.S. Patent Nos. 4,464,485, 4,797,425, 4,828,771 and 5,242,635, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case

qualifies as prior art under 35 U.S.C. 102(f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee is required under 35 U.S.C. 103(c) and 37 CFR 1.78(c) to either show that the conflicting inventions were commonly owned at the time the invention in this application was made or to name the prior inventor of the conflicting subject matter. Failure to comply with this requirement will result in a holding of abandonment of the application.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications filed on or after November 29, 1999.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

16. Claims 1-4, 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over either U.S. Patent No. 4,464,485 (Kishima et al. #1) or U.S. Patent No. 4,797,425 (Kishima et al. #2) or U.S. Patent No. 4,828,771 (Kishima et al. #3) or U.S. Patent No. 5,242,635 (Matsumoto et al.).

The applied references have common inventor(s) with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the

inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Claims 1-4, 12 and 13

Kishima et al. #1, Kishima et al. #2, Kishima et al. #3 and Matsumoto et al. all teach a method of producing a porous material having open pores including preparing (stirring) a slurry (an O/W-type emulsion slurry) from a mixture comprising bisphenol-type epoxy resin (an epoxy compound having at least one epoxy ring in one molecule; a glycidyl epoxy resin; a bisphenol epoxy resin), a polyamide hardener (said hardener contains a polyamide resin), a filler, water and optionally a surface active agent (a dilatancy reducing agent); casting the slurry into a water-impermeable mold; hardening the slurry while it contains the water; and dehydrating the hardened body (Kishima et al. #1: column 3, lines 34-52; column 4, lines 3-7; column 7, lines 44-65; column 10, lines 10-22; claims / Kishima et al. #2: column 1, lines 6-16; column 1, line 60 - column 2, line 10; column 2, lines 48-61; column 3, lines 10-26; column 4, lines 3-23; column 5, lines 37-47; claims / Kishima et al. #3: column 1, lines 6-16; column 3, lines 17-39; column 5, lines 5-16; column 5, lines 56-63; column 6, lines 40-68; column 7, lines 1-46; claims / Matsumoto et al.: column 3, lines 56-65; column 4, lines 11-68; claims). Note that claim 13 is currently written does not require that the components are added in any particular order and that each individual mixture is stirred separately; therefore, the single step mixing process taught by the processes of Kishima et al. #1, Kishima et al. #2, Kishima et al. #3 and Matsumoto et al. is readable on claim 13 as currently written.

Neither Kishima et al. #1, Kishima et al. #2, Kishima et al. #3 nor Matsumoto et al. specifically teaches the functions of the hardener and the filler as claimed in claim 1. However, one of ordinary skill in the art would have obviously recognized, when taking the teachings of each of the references as a whole, that the hardener and the filler serve the claimed functions to at least some degree in the processes of Kishima et al. #1, Kishima et al. #2, Kishima et al. #3 and Matsumoto et al. although not specifically taught.

17. Claims 5, 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over either [U.S. Patent No. 4,464,485 (Kishima et al. #1) or U.S. Patent No. 4,797,425 (Kishima et al. #2) or U.S. Patent No. 4,828,771 (Kishima et al. #3) or U.S. Patent No. 5,242,635 (Matsumoto et al.)] in view of U.S. Patent No. 4,783,489 (Inoue et al.).

The applied primary references have common inventor(s) with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Claims 5 and 9

The discussion of Kishima et al. #1, Kishima et al. #2, Kishima et al. #3 and Matsumoto et al. as applied to claim 1 above applies herein.

Neither Kishima et al. #1, Kishima et al. #2, Kishima et al. #3 nor Matsumoto et al. specifically teaches that the filler has an average particle diameter ranging from 0.3 μm to 8 μm and that the filler is primarily composed of aluminum hydroxide. In this regard, Inoue et al. teach a method of manufacturing porous resin molds containing continuous holes including adding a hardener to a mixture of an epoxy compound and an emulsifier; fully stirring the mixture to make it into an even emulsion while gradually adding water; adding filler to the emulsion; fully stirring the emulsion containing the filler to form an even mixture to be used as a molding material; pouring the molding material into a container; and fully curing

and evaporating water from the material molded in the container to obtain a porous resin mold containing continuous holes wherein the filler may comprise aluminum hydroxide and preferable has a particle range such as 60-100 mesh, 100-200 mesh, 200-300 mesh or smaller than 300 mesh (an average particle diameter ranging from 0.3 μm to 8 μm) (column 7, lines 33 - 54; column 5, line 39 - column 6, line 11). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use an aluminum hydroxide filler having the claimed average particle diameter in the process of the claims of either Kishima et al. #1, Kishima et al. #2, Kishima et al. #3 or Matsumoto et al. as taught by Inoue et al. to form a porous article having excellent dimensional stability, mechanical properties and durability (see specifically column 2, lines 60-64 of Inoue et al.).

Claim 11

The discussion of Kishima et al. #1, Kishima et al. #2, Kishima et al. #3 and Matsumoto et al. as applied to claim 1 above applies herein.

Neither Kishima et al. #1, Kishima et al. #2, Kishima et al. #3, Matsumoto et al. nor Inoue et al. specifically teaches that the filler has a grain size distribution selected such that an integrated sieve volume of particle diameters which are ¼ of the Rosin-Rammler's absolute size constant is <= 30%. However, Inoue et al. further teach that the pore diameter and porosity of the mold are determined by the range of particle sizes of the filler and the composition of the filler (column 6, lines 2-6). As such, Inoue et al. obviously recognized that the particle/grain size distribution is a result-effective variable. Therefore, one of ordinary skill in the art would have obviously determined the optimum particle/grain size distribution in the process of either (Kishima et al. #1, Kishima et al. #2, Kishima et al. #3 or Matsumoto et al.) in view of Inoue et al. through routine experimentation based upon the desired pore diameter and porosity of the porous article.

18. Claim 8 is rejected under 35 U.S.C. 103(a) as being obvious over U.S. Patent No. 4,464,485 (Kishima et al. #1) in view of U.S. Patent No. 4,783,489 (Inoue et al.).

The applied primary reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any

invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Claim 8

The discussion of Kishima et al. #1 as applied to claim 1 above applies herein.

Kishima et al. #1 further teaches that the hardener is either (a) a mixture of an amide compound (a polyamide resin) which obtained through a reaction between a monomeric fatty acid and an ethyleneamine (chain-like fatty primary polyamine), or (b) a reaction mixture obtained by mixing reaction of the monomeric fatty acid, the polymeric fatty acid and the ethyleneamine (chain-like fatty primary polyamine) and wherein the ratio between the polymeric fatty acid and the polymeric fatty acid polyamide ranges between 90:10 and 5:95 by weight (column 3, lines 34-52; column 4, lines 3-7; column 7, lines 44-65; column 10, lines 10-22; claims).

Kishima et al. #1 does not specifically teach that the filler has an average particle diameter ranging from 1 μm to 20 μm. In this regard, Inoue et al. teach a method of manufacturing porous resin molds containing continuous holes including adding a hardener to a mixture of an epoxy compound and an emulsifier; fully stirring the mixture to make it into an even emulsion while gradually adding water; adding filler to the emulsion; fully stirring the emulsion containing the filler to form an even mixture to be used as a molding material; pouring the molding material into a container; and fully curing and evaporating water from the material molded in the container to obtain a porous resin mold containing continuous holes wherein the filler may comprise aluminum hydroxide and preferable has a particle range such as 60-100 mesh, 100-200 mesh, 200-300 mesh or smaller than 300 mesh (an average particle

diameter ranging from 1 μm to 20 μm) (column 7, lines 33 - 54; column 5, line 39 - column 6, line 11). It would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made and one of ordinary skill would have been motivated to use a filler having the claimed average particle diameter in the process of Kishima et al. #1 as taught by Inoue et al. to form a porous article having excellent dimensional stability, mechanical properties and durability (see specifically column 2, lines 60-64 of Inoue et al.).

19. Claims 1-5, 9 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,783,489 (Inoue et al.).

Claims 1 and 13

Inoue et al. teach a method of manufacturing porous resin molds (body for using in slip casting mold for slip casting a powder material) containing continuous holes including adding a hardener to a mixture of an epoxy compound such as an epoxy compound based on a heterocyclic epoxy resin (having at least one epoxy ring in one molecule) and an emulsifier; fully stirring the mixture to make it into an even emulsion (O/W-type emulsion slurry) while gradually adding water; adding filler to the emulsion; fully stirring the emulsion containing the filler to form an even mixture to be used as a molding material; pouring (casting) the molding material (emulsion slurry) into a container (a mold impermeable to water); partially curing the material molded in the container (hardening the emulsion slurry in the mold while container water); and fully curing and evaporating water from the material molded in the container to obtain a porous resin mold containing continuous holes (column 3, lines 38-64; column 7, lines 33 - 54). Note that claim 13 is currently written does not require that the components are added in any particular order and that each individual mixture is stirred separately; therefore, the single step mixing process taught by the process of Inoue et al. is readable on claim 13 as currently written.

Inoue et al. does not specifically teach the functions of the hardener and the filler as claimed in claim 1. However, one of ordinary skill in the art would have obviously recognized, when taking the teachings of Inoue et al. as a whole, that the hardener and the filler serve the claimed functions to at least some degree in the process of Inoue et al. although not specifically taught.

Claims 2 and 3

The discussion of Inoue et al. as applied to claim 1 above applies herein.

Inoue et al. further teach that the epoxy compound is preferable a diglycidyl ether of the bisphenol A type (a glycidyl epoxy resin; a bisphenol epoxy resin) (column 3, lines 38-64).

Claim 4

The discussion of Inoue et al. as applied to claim 1 above applies herein.

Inoue et al. further teach that the hardener may be a polyamide such as the polycondensate of basic acid (the hardener contains a polyamide resin) (column 4, lines 3-28).

Claims 5 and 9

The discussion of Inoue et al. as applied to claim 1 above applies herein.

Inoue et al. further teach that the filler may comprise aluminum hydroxide and preferable has a particle range such as 60-100 mesh, 100-200 mesh, 200-300 mesh or smaller than 300 mesh (an average particle diameter ranging from 0.3 μm to 8 μm or 1 μm to 20 μm) (column 5, line 39 - column 6, line 11).

Claim 11

The discussion of Inoue et al. as applied to claim 1 above applies herein.

Inoue et al. does not specifically teach that the filler has a grain size distribution selected such that an integrated sieve volume of particle diameters which are ¼ of the Rosin-Rammler's absolute size constant is <= 30%. However, Inoue et al. further teach that the pore diameter and porosity of the mold are determined by the range of particle sizes of the filler and the composition of the filler (column 6, lines 2-6). As such, Inoue et al. obviously recognized that the particle/grain size distribution is a result-effective variable. Therefore, one of ordinary skill in the art would have obviously determined the optimum particle/grain size distribution in the process of Inoue et al. through routine experimentation based upon the desired pore diameter and porosity of the porous article.

Claim 12

The discussion of Inoue et al. as applies to claim 1 above applies herein.

Inoue et al. further teaches that a surface-active agent such as a surfactant (a dilatancy reducing agent) can be used to improve wetting of the fillers with water and to function as a protective colloid (column 5, line 7-37).

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent No. 5,017,632 (Bredow et al.) has been cited of interest to show the state of the art at the time the invention was made.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael I Poe whose telephone number is (571) 272-1207. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on (571) 272-1196. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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